

and four bodies have been recovered. The stone bridge was swept away at 7 p. m.; two iron bridges of the Johnstown, Fonda, and Gloucester Railroad were wrecked, and seven or eight other bridges were carried away.—*Evening Wisconsin, Milwaukee, Wis., July 10.*

Austin, Travis Co., Tex., 12th: heavy rains west of here have swollen all the streams, and the Colorado at this point is higher than for twenty years, and is still rising at the rate of ten inches per hour. Plantations on the bottom lands are overflowed, causing heavy loss. Two spans of a new iron bridge below the city have been carried off.—*Union and Advertiser, Rochester, N. Y., July 12.*

Utica, Oneida Co., N. Y., 18th: Herkimer Creek rose very rapidly during the day and soon flooded the village of Schuyler's Lake, Otsego Co. The West Shore tracks at Indian Castle and Little Falls are under water, and the wires are down. The tracks of the Delaware, Lackawanna, and Western are washed out in many places between here and Norwich.—*Union and Advertiser, Rochester, N. Y., July 20.*

Trinidad, Las Animas Co., Colo., 19th: at about 2 p. m. the Purgatory River began to rise very rapidly, and in one hour overflowed the banks in many places in the western portion of the city. The loose work of a bridge under construction was carried away.—*Denver Colo., Republican, July 20.*

Fredonia, Wilson Co., Kans., 26th: the water in the flooded Fall River bottoms at this place rose at the rate of two inches an hour. The river in places was seven miles wide, and the water twenty feet deep. The heavy iron bridge was carried off on the evening of the 24th.—*Commercial-Advertiser, Buffalo, N. Y., July 26.*

Middletown, Middlesex Co., Conn., 31st: for the last six days it has rained almost steadily. Much damage is reported, and crops are badly injured in the outlying districts. Factories were flooded and compelled to shut down. It was reported that the dam of the Metropolitan Wringer Company at Middlefield went down. Forty feet of the Air Line Railroad near here, and the Valley Railroad this side of Chester were washed out.—*The Evening Post, New York City, August 1.*

Philadelphia, Pa., 31st: the water in the Schuylkill River attained the highest point reached in this city for twenty years, involving a destruction to property estimated at from \$10,000 to \$20,000. The park drives were flooded and the streets near the river banks were under water to a depth of from four to five feet. The coffer-dam of the new Reading Railroad bridge was washed away, entailing a loss of \$5,000. All work at the Manayunk and the Pencoyd iron works was

stopped, owing to the encroachment of water.—*The Evening Post, New York City, August 1.*

Norristown, Montgomery Co., Pa., 31st: the Schuylkill at this point was higher than it has been since 1869, being seventeen feet above low-water mark. The water overflowed portions of the lumber yards, and the Reading Railroad tracks below this city were entirely submerged. At various other places the tracks of this road were under water. Vast quantities of logs, fencing, and grain floated down the stream. Easton, Northampton Co., Pa.: the Lehigh and Delaware rivers at this point rose rapidly. Navigation was suspended, mills closed, and trains on the Lehigh Valley and Jersey Central railroads delayed by the flood.—*Ledger and Transcript, Philadelphia, Pa., August 1.*

The following table shows the danger-points at the various stations; the highest and lowest water for July, 1889, with the dates of occurrence and the monthly ranges:

Heights of rivers above low-water mark, July, 1889 (in feet and tenths).

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
<i>Red River:</i>						
Shreveport, La.	29.9	16, 17, 18	17.6	31	13.4	4.2
<i>Arkansas River:</i>						
Fort Smith, Ark.	22.0	29	14.3	20	3.7	10.6
Little Rock, Ark.	23.0	31	17.7	18, 19, 20, 21	5.8	11.9
<i>Missouri River:</i>						
Fort Buford, Dak.	1	7.0	27, 31	2.9	4.1
Sioux City, Ia.	1, 2	21.6	29, 30	19.7	1.9
Omaha, Nebr.	18.0	1	9.7	31	8.4	1.3
Leavenworth, Kans.	20.0	22	11.9	17	8.3	3.6
Kansas City, Mo.	21.0	27	13.8	15, 16	10.2	3.6
<i>Mississippi River:</i>						
Saint Paul, Minn.	14.5	26	2.9	5, 7, 8	2.0	0.9
La Crosse, Wis.	24.0	3	4.4	29, 30, 31	2.5	1.9
Dubuque, Iowa.	16.0	3	4.8	31	2.7	2.1
Davenport, Iowa.	15.0	14	3.9	31	2.0	1.9
Keokuk, Iowa.	14.0	18	4.6	31	2.4	2.2
Saint Louis, Mo.	32.0	1	15.5	16, 17, 18	10.9	4.6
Cairo, Ill.	40.0	1	27.7	10, 11	20.5	7.2
Memphis, Tenn.	34.0	1	25.3	13	15.9	9.4
Vicksburg, Miss.	41.0	3	34.4	21, 28, 29	21.3	13.1
New Orleans, La.	13.0	7	11.8	30, 31	6.9	4.9
<i>Ohio River:</i>						
Pittsburgh, Pa.	22.0	5	10.8	26, 28	2.2	8.6
Parkersburg, W. Va.	38.0	20	12.8	30	6.0	6.8
Cincinnati, Ohio.	50.0	23	25.2	16	13.6	11.6
Louisville, Ky.	25.0	24	9.7	19	6.8	2.9
<i>Cumberland River:</i>						
Nashville, Tenn.	40.0	31	14.7	18, 26	5.0	9.7
<i>Tennessee River:</i>						
Chattanooga, Tenn.	33.0	31	9.2	26	3.5	5.7
<i>Monongahela River:</i>						
Pittsburgh, Pa.	29.0	5	10.8	26, 28	2.2	8.6
<i>Savannah River:</i>						
Augusta, Ga.	32.0	29	16.3	25	6.5	9.8
<i>Willamette River:</i>						
Portland, Oregon.	15.0	13	6.2	21, 22	3.3	2.9

ATMOSPHERIC ELECTRICITY.

AURORAS.

Auroras were observed during the month, as follows: 1st, Rolling Green, Minn.; South Canisteo, N. Y. 2d and 3d, South Canisteo, N. Y. 5th, Gardiner, Me.; South Canisteo, N. Y. 7th, Beallville, Ohio. 9th, South Canisteo, N. Y. 11th, Gardiner, Me.; Mount Washington, N. H.; South Canisteo, N. Y. 12th and 13th, South Canisteo, N. Y. 15th, Mount Washington, N. H.; Quakertown, Pa. 16th, Wauseon, Ohio. 17th, Webster, Dak. 18th, Gardiner and Orono, Me.; Mount Washington, N. H. 20th, Gardiner, Me.; Newburyport, Mass.; Alpena, Mich.; Saint Vincent, Minn.; Hanover, N. H. 21st, Webster, Dak.; South Canisteo, N. Y. 22d, Webster, Dak. 23d and 24th, South Canisteo, N. Y. 25th, Woodbury, N. J. 26th, Gardiner, Me. 30th, Webster, Dak.; Marquette, Mich.; Hayward, Wis.

Saint Vincent, Minn.: a singular phenomenon was observed between 11 p. m. and midnight of the 20th. A small patch of luminous cirrus clouds appeared a little south of the zenith, drifting slowly toward west-northwest. About 11.45 p. m.

streaks of similarly luminous clouds were seen arranged in a straight line across the sky, presumably visible portions of an auroral band, extending from 20° south of east to 15° north of west, and passing 8° or 10° south of the zenith; these streaks lasted but a few minutes. A very faint auroral arch was seen from about 9 p. m. to midnight. It extended from about azimuth 160° to 250°, and altitude 12°. The night was misty near the horizon, but the sky was free from clouds.

Alpena, Mich.: an aurora, covering 30° of the horizon and extending to altitude 15°, was observed in the north at 8.45 p. m., 20th. It consisted of a white light, with a few small streamers having an apparent motion from north to east. The display ended at midnight.

THUNDER-STORMS.

The more severe thunder-storms of the month are described under "Local storms." Thunder-storms were reported in the greatest number of state and territories, thirty-nine, on the 13th and 14th; in thirty-two on the 23d and 29th; in thirty-one on the 19th; in thirty on the 10th, 11th, 17th, and 20th; in twenty-nine on the 12th and 21st; in from twenty-five to

twenty-eight, inclusive, on the 1st, 2d, 3d, 9th, 15th, 24th, 26th, 27th, 28th, and 30th; in from nineteen to twenty-four, inclusive, on the 7th, 8th, 16th, 18th, 22d, and 25th; and in from thirteen to seventeen, inclusive, on the 4th, 5th, 6th, and 31st. There were no dates for which thunder-storms were reported in less than thirteen states and territories.

Thunder-storms were reported on the greatest number of dates, thirty-one, in Florida; on twenty-nine in Arizona; on twenty-eight in Dakota; on twenty-seven in Alabama; on twenty-five in Iowa, Kansas, Louisiana, New York, and Texas; on twenty-four in Mississippi, Nebraska, Ohio, and Tennessee; on twenty-three in Georgia and Minnesota; on twenty-two in

Illinois, Michigan, and South Carolina; on twenty-one in Indiana, and Missouri; on from fifteen to twenty, inclusive, in Arkansas, Colorado, Indian Territory, Kentucky, Maryland, Montana, New Jersey, North Carolina, Pennsylvania, Virginia, and Wisconsin; on from ten to fourteen, inclusive, in Massachusetts, New Mexico, Utah, Vermont, West Virginia, and Wyoming; on from five to nine, inclusive, in Connecticut, Maine, Nevada, New Hampshire, and Oregon, and on from one to four, inclusive, in California, Delaware, District of Columbia, Idaho, Rhode Island, and Washington Territory. There were no states or territories in which thunder-storms were not reported for one or more dates.

MISCELLANEOUS PHENOMENA.

FOREST FIRES.

Albina, Multnomah Co., Oregon, 17th: dangerous forest fires have been burning for the last week in this county and in the southern part of Washington Territory. The fires have caused losses which will aggregate \$750,000. Showers of sparks and cinders are flying over this place.—*Post-Express, Rochester, N. Y., July 17.*

Fort Assiniboine, Mont., 28th: forest fires are reported in the spurs of the Rocky Mountains west of this place.

Chico, Butte Co., Cal., 29th: forest fires are raging on the Humboldt Road, eighteen miles from this place. The fire has burned over a district four miles in length, and destroyed much valuable timber.—*Post-Express, Rochester, N. Y., July 29.*

Fort Benton, Mont., 29th: forest fires are raging in the mountains and along the banks of the Missouri for many miles below here. The Northern Pacific track east of Livingston, Park Co., was burned out for a short distance. Several mining camps have been deserted, and ranchers are plowing around their land to prevent the fire from spreading.—*Union and Advertiser, Rochester, N. Y., July 29.*

Glenwood Springs, Garfield Co., Colo., 30th: the forest fire which has been burning in this vicinity for several days past covers an area of over ten square miles. The air over the entire western slope is filled with smoke from the burning fires in the mountains.—*The Palladium, Oswego, N. Y., July 30.*

Sierra City, Cal., 30th: large forest fires are raging in this section.—*The Morning Call, San Francisco, Cal., July 31.*

Gunnison, Colo., 30th: for the last two or three days the mountains in this vicinity have been ablaze with burning timber. The fires are supposed to have started from sparks of locomotives.—*Oswego, N. Y., Daily Times, July 30.*

Susanville, Lassen Co., Cal., 31st: forest fires have been burning for the last two months to the north and west of this city, doing considerable damage to stock ranges and timber land.—*Report of T. B. Sanders.*

Boisé City, Idaho, 31st: extensive forest fires are reported in the mountains about forty-five miles north of this city. The fires have taken such proportions that the governor of the territory has requested aid from the Interior Department at Washington City in extinguishing them.

Helena, Mont., 31st: extensive forest fires have been raging in this section for the past ten days, destroying what little grass was spared by the long and protracted drought.

Forest fires were also reported as follows: Red Bluff, Cal., northeast and west of this city, 12th, 13th; San Diego, Cal., 29th, 30th; Linkville, Oregon, 26th, 28th; Roseburgh, Oregon, 27th, 31st; Port Angeles, Wash., 19th.

HALOS.

Solar halos were most frequently reported in Tennessee, where they were noted on thirteen days; in Illinois on eleven days; in Iowa, Kansas, Massachusetts, and New York on from five to nine days, and in Arkansas, Dakota, Georgia, Idaho, Indiana, Maryland, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, Ohio, Oregon, Pennsylvania, Rhode

Island, South Carolina, Texas, Virginia, Washington Territory, and Wisconsin on from one to five days. In states and territories other than those named no solar halos were reported. They were reported in the greatest number of states and territories, eight, on the 23d; in seven, on the 13th; in from one to six, inclusive, on the 1st, 5th, 6th, 8th to 12th, inclusive, 14th to 22d, inclusive, and from the 24th to 31st, inclusive.

Lunar halos were most frequently reported in Louisiana and South Carolina, where they were noted on seven dates; in Alabama, Illinois, Indiana, Iowa, Kansas, Massachusetts, Michigan, Minnesota, Mississippi, Nebraska, Nevada, New Jersey, New York, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia, Wisconsin, and Wyoming on from one to five dates. In states and territories other than those named no lunar halos were reported. They were reported in the greatest number of states and territories, nine, on the 8th, and in from one to five, inclusive, on from the 1st to 7th, inclusive, 9th to 15th, inclusive, 18th, 22d, 23d, 27th to 31st, inclusive. For dates other than those named no lunar halos were reported.

METEORS.

The distribution of meteors by dates was as follows: 1st, Kalamazoo, Mich. 3d, Teviston, Ariz.; New Orleans, La. 5th, Louisville, Ill. 7th, Yellow Springs, Ohio. 9th, Chattanooga, Tenn. 10th, Charleston, S. C. 11th, Springfield, Ill.; Yellow Springs, Ohio. 12th, Springfield, Ill. 13th, Waverly, Ohio. 14th, New Orleans, La.; Dudley, Mass. 15th, Whipple Barracks (Prescott), Ariz.; Kissimee, Fla.; Charleston, Ill.; Dudley, Mass.; Beverly, N. J. 16th, Wheatland, Cal.; Crowley, La.; Sault de Ste Marie, Mich.; Lewer's Ranch, Nev.; Riddleton, Tenn. 17th, Tenafly, N. J.; Cedar Springs, S. C. 18th, Chicago, Ill.; Concordia, Kans.; Amherst, Mass.; Wedgewood, N. Y. 20th, Thornville, Mich.; Rolling Green, Minn.; Nashua, N. H.; Wilmington, N. C. 21st, Wedgewood, N. Y. 22d, Brownsville, Tex. 23d, Sault de Ste Marie, Mich.; Nashville, Tenn. 24th, Keeler, Cal. 25th, Villa City, Fla. 26th, Berkeley, Cal.; Kissimee, Fla.; Thornville, Mich. 27th, Whipple Barracks, Ariz.; Little Rock, Ark. 28th and 29th, Mesquite, Tex. 30th, Kissimee, Fla. 31st, Villa City, Fla.; Charleston, Ill.; Riddleton, Tenn.

Charleston, S. C.: a large meteor was observed in the north-western sky at 8.30 p. m., 10th. It was shooting down towards the horizon, with considerable rapidity, and burst when in about altitude 20°. Huge flakes of what appeared to be molten fire flew in different directions, and disappeared.—*The Daily Sun, Charleston, S. C., July 11.*

Springfield, Ill.: a very brilliant meteor was observed in the northern sky shortly after 11 p. m., 11th. As the meteor fell it resembled a large sky rocket descending to the earth, and while visible it changed colors several times.

Wheatland, Yuba Co., Cal.: a brilliant meteor was observed at 9.16 p. m., 16th. It consisted of a large pear-shaped ball of white light, followed closely by a smaller red one, falling slowly in a southeasterly direction at an angle of 45°. Immediately before disappearing the meteor burst like a rocket.—*Report of Mr. William Lumbard.*